

**Water Body Fact Sheets for 2002
Section 303(d) List Update
Lahontan Region**

***MOJAVE, TRONA, AND AMARGOSA HYDROLOGIC
UNITS***

**California Regional Water Quality Control Board, Lahontan Region
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Note: This packet contains water body-specific fact sheets for certain waters of the Mojave and Trona Hydrologic Units. The Amargosa River, in the Amargosa Hydrologic Unit, is also proposed for delisting. See the information on the Amargosa River in the summary fact sheet for “Nine Naturally Impaired Waters.”

MOJAVE RIVER, PRIORITY ORGANICS
2002 Section 303(d) Fact Sheet
Delisting

Evidence to Support Delisting

A ten-mile segment of the Mojave River in San Bernardino County (HU No.628.00) is currently Section 303(d)-listed for “priority organics” due to the impacts of the “Barstow Slug” of subsurface pollutants. The Mojave River is an intermittent stream and normally flows on the surface for only part of its length; however, the entire river was considered a surface water for purposes of the initial assessment. Delisting of the segment affected by the "Barstow Slug" (latitude 34.899 °N, longitude 117.022 °W) is proposed for two reasons: (1) a scientific study has shown that priority pollutants are no longer present in concentrations of concern in the area affected by the groundwater plume; and (2) Regional Board staff’s current approach is to recommend listing only for impairment of surface flows in ephemeral and intermittent streams.

The “Barstow Slug” was attributed to industrial discharges, largely from railroad activities, and municipal discharges from the local wastewater treatment plant. Beginning about 1910, waste fuel oil and solvents from the railroad were discharged to the dry riverbed. Beginning in 1938, municipal wastewater was also discharged to the riverbed, and the treatment plant was enlarged in 1953 and 1968. By 1972, the groundwater plume from the 1910 disposal area was over 1800 feet wide and extended about 4.5 miles downgradient. Its upper surface was about 60 feet below ground. A study completed in 1990 showed that the plume of subsurface pollutants had attenuated, apparently naturally, to levels that no longer posed threats to beneficial uses. Subsequent USGS studies indicate that ongoing municipal wastewater discharges to groundwater, and nonpoint source discharges from a golf course, are violating the numerical water quality objectives for total dissolved solids (TDS) and nitrate in the subsurface portion of the Mojave River near Barstow. However, because there are no applicable numerical objectives for surface water in this segment of the river, it is not recommended to be listed for TDS and nitrate. Surface water objectives may be developed in the future as part of the Regional Board’s ongoing Watershed Management Initiative process.

Watershed Characteristics

The Mojave River watershed, in San Bernardino County, has an area of about 1600 square miles. Its headwaters are in the San Bernardino Mountains with an elevation of about 8500 feet. The river has two large perennial tributaries, the West Fork of the Mojave River and Deep Creek. These streams converge immediately upstream of the Mojave Forks dam, a flood control facility, to form the main Mojave River. The river channel is about 120 miles long and ends at Soda and Silver Dry Lakes near the town of Baker. The U.S. Geological Survey has divided the watershed into five sub-basins based on hydrologic characteristics: Headwaters, or tributaries above Mojave Forks dam; Upper Basin, from Mojave Forks dam to Lower Narrows at Victorville; Middle Basin, from Lower Narrows to Waterman Fault at Barstow; Lower Basin, from Waterman Fault to Afton Canyon, and Tailwater, from Afton Canyon to Silver Dry Lake. Most of the baseflow in the main Mojave River channel is underground. Impermeable bedrock forces ground water to the surface

**Mojave River, Priority Organics
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of the channel at the Upper and Lower Narrows near Victorville and at Afton Canyon, below Barstow.

Information Sources

CEPIS, no date. Ground-Water Pollution, In: Seminar Publication: Protection of public water supplies from ground-water contamination, Environmental Protection Agency. Available on the Internet: <<http://www.cepis.ops-oms.org/muwww/fulltext/repind46/ground/ground.html>>

Maxwell, C.R. 2000. A Watershed Management Approach to Assessment of Water Quality and Development of Revised Water Quality Standards for the Ground Waters of the Mojave River Floodplain. Paper presented at National Water Quality Monitoring Council Conference, April 25-27, 2000, Austin TX.

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**MOJAVE RIVER BETWEEN UPPER AND LOWER NARROWS, TOTAL DISSOLVED
SOLIDS
2002 Section 303(d) Fact Sheet
Listing**

Summary of Proposed Action

The surface water segment of the Mojave River between the Upper and Lower Narrows near Victorville is recommended for addition to the 2002 Section 303(d) list for violations of the drinking water Maximum Contaminant Level for total dissolved solids. (A different segment of the Mojave River near Barstow was previously listed for priority organics and is currently recommended for delisting.)

Table 1. 303(d) Listing/TMDL Information

Waterbody Name	Mojave River	Pollutant(s)	Total Dissolved Solids
Hydrologic Unit	628.00	Sources	Natural (geothermal), imported water, wastewater
Total Length	120 miles	TMDL Priority	High
Size Affected	2 miles	TMDL Start Date	After 2015
Upstream Extent Latitude	34.573° N, 117.318° W	Original 303(d) Listing Year	2002

Watershed Characteristics

The Mojave River watershed, in San Bernardino County, has an area of about 1,600 square miles. Its headwaters are in the San Bernardino Mountains at an elevation of about 8,500 feet above sea level. The river has two large perennial tributaries, the West Fork of the Mojave River and Deep Creek. These streams converge immediately upstream of the Mojave Forks dam, a flood control facility, to form the main Mojave River. The river channel is about 120 miles long and ends at Soda and Silver Dry Lakes near the town of Baker. The USGS has divided the watershed into five sub-basins based on hydrologic characteristics: Headwaters, or tributaries above Mojave Forks Dam; Upper Basin, from Mojave Forks dam to Lower Narrows at Victorville; Middle Basin, from Lower Narrows to Waterman Fault at Barstow; Lower Basin, from Waterman Fault to Afton Canyon; and Tailwater, from Afton Canyon to Silver Dry Lake. Most of the baseflow in the main Mojave River channel is underground. Impermeable bedrock forces ground water to the surface of the channel at the Upper and Lower Narrows near Victorville and at Afton Canyon, below Barstow. The Mojave River is one of the Lahontan Regional Board's priority watersheds for the Watershed Management Initiative.

Water Quality Standards Not Attained

There is no site-specific numerical water quality objective for total dissolved solids in this segment of the Mojave River. However, the state drinking water Maximum

Mojave River, Total Dissolved Solids 2002 Section 303(d) Fact Sheet, Page 2

Contaminant Level (MCL), 500 milligrams per liter (mg/L), applies under the narrative objective for “Chemical Constituents.”

Evidence of Impairment

Concentrations of total dissolved solids in 5 samples collected at the Upper Narrows between March 2000 and June 2001 ranged from 840 to 1100 mg/L, with a mean concentration of 962 mg/L. All of these values exceeded the drinking water MCL.

Extent of Impairment

The segment proposed for listing is between the Upper and Lower Narrows, about two miles in length.

Potential Sources

Potential upstream sources of total dissolved solids loading to the groundwater that surfaces at the Upper Narrows include geothermal springs tributary to Deep Creek, wastewater discharges from communities in the upper watershed, and imported (California Water Project) water stored in Silverwood Lake.

TMDL Priority

This TMDL is recommended for high priority, with completion projected to occur after 2015.

Information Sources

California Regional Water Quality Control Board, Central Valley Region, 2000. *A Compilation of Water Quality Goals*.

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region*.

California Regional Water Quality Control Board, Lahontan Region. Mojave River and D Street data.

MOJAVE RIVER BETWEEN UPPER AND LOWER NARROWS, CHLORIDE
2002 Section 303(d) Fact Sheet
Listing

Summary of Proposed Action

The surface water segment of the Mojave River between the Upper and Lower Narrows near Victorville is recommended for addition to the 2002 Section 303(d) list for violations of water quality objectives for chloride. (A different segment of the Mojave River near Barstow was previously listed for priority organics and is currently recommended for delisting.)

Table 1. 303(d) Listing/TMDL Information

Waterbody Name	Mojave River	Pollutant(s)	Chloride
Hydrologic Unit	628.00	Sources	Natural (geothermal), imported water, wastewater
Total Length	120 miles	TMDL Priority	High
Size Affected	2 miles	TMDL Start Date	After 2015
Upstream Extent Latitude	34.573° N, 117.318° W	Original 303(d) Listing Year	2002

Watershed Characteristics

The Mojave River watershed, in San Bernardino County, has an area of about 1,600 square miles. Its headwaters are in the San Bernardino Mountains with an elevation of about 8,500 feet above sea level. The river has two large perennial tributaries, the West Fork of the Mojave River and Deep Creek. These streams converge immediately upstream of the Mojave Forks Dam, a flood control facility, to form the main Mojave River. The river channel is about 120 miles long and ends at Soda and Silver Dry Lakes near the town of Baker. The USGS has divided the watershed into five sub-basins based on hydrologic characteristics: Headwaters, or tributaries above Mojave Forks dam; Upper Basin, from Mojave Forks dam to Lower Narrows at Victorville; Middle Basin, from Lower Narrows to Waterman Fault at Barstow; Lower Basin, from Waterman Fault to Afton Canyon; and Tailwater, from Afton Canyon to Silver Dry Lake. Most of the baseflow in the main Mojave River channel is underground. Impermeable bedrock forces ground water to the surface of the channel at the Upper and Lower Narrows near Victorville and at Afton Canyon, below Barstow. The Mojave River is one of the Lahontan Regional Board's priority watersheds for the Watershed Management Initiative.

Water Quality Standards Not Attained

The numerical water quality objectives for chloride applicable to this segment of the river are 75 milligrams per liter (mg/L) as an annual mean and 100 mg/L as a 90th percentile value. (Under a 90th percentile objective, no more than 10 percent of all samples during a

Mojave River, Chloride

2002 Section 303(d) Fact Sheet, Page 2

given year are allowed to exceed the stated concentration.) These water quality objectives date from 1975 and were probably based on limited historical sampling data.

Evidence of Impairment

Chloride concentrations in five samples collected at the Upper Narrows between March 2000 and June 2001 ranged from 190 to 290 mg/L, with a mean concentration of 238 mg/L. The mean value, and three of five sample values, exceed the federal 4-day average continuous concentration criterion for freshwater aquatic life (230 mg/L). (This station is in a transition zone between mountain and desert ecoregions, and freshwater criteria may not necessarily be applicable to local native aquatic species.)

Extent of Impairment

The segment proposed for listing is between the Upper and Lower Narrows, about two miles in length.

Potential Sources

Potential upstream sources of chloride loading to the groundwater that surfaces at the Upper Narrows include geothermal springs tributary to Deep Creek, wastewater discharges from communities in the upper watershed, and imported (California Water Project) water stored in Silverwood Lake.

TMDL Priority

This TMDL is recommended for high priority with completion projected to occur after 2015.

Information Sources

California Regional Water Quality Control Board, Central Valley Region, 2000. *A Compilation of Water Quality Goals*.

California Regional Water Quality Control Board, Lahontan Region, 1975. *Water Quality Control Plan for the South Lahontan Basin*.

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region*.

California Regional Water Quality Control Board, Lahontan Region. Mojave River and D Street data.

MOJAVE RIVER BETWEEN UPPER AND LOWER NARROWS, SULFATE
2002 Section 303(d) Fact Sheet
Listing

Summary of Proposed Action

The surface water segment of the Mojave River between the Upper and Lower Narrows near Victorville is recommended for addition to the 2002 Section 303(d) list for violations of water quality objectives for sulfate. (A different segment of the Mojave River near Barstow was previously listed for priority organics and is currently recommended for delisting.)

Table 1. 303(d) Listing/TMDL Information

Waterbody Name	Mojave River	Pollutant(s)	Sulfate
Hydrologic Unit	628.00	Sources	Natural (geothermal), imported water, wastewater
Total Length	120 miles	TMDL Priority	High
Size Affected	2 miles	TMDL Start Date	After 2015
Upstream Extent Latitude	34.573° N, 117.318° W	Original 303(d) Listing Year	2002

Watershed Characteristics

The Mojave River watershed, in San Bernardino County, has an area of about 1,600 square miles. Its headwaters are in the San Bernardino Mountains with an elevation of about 8,500 feet above sea level. The river has two large perennial tributaries, the West Fork of the Mojave River and Deep Creek. These streams converge immediately upstream of the Mojave Forks dam, a flood control facility, to form the main Mojave River. The river channel is about 120 miles long and ends at Soda and Silver Dry Lakes near the town of Baker. The USGS has divided the watershed into five sub-basins based on hydrologic characteristics: Headwaters, or tributaries above Mojave Forks Dam; Upper Basin, from Mojave Forks dam to Lower Narrows at Victorville; Middle Basin, from Lower Narrows to Waterman Fault at Barstow; Lower Basin, from Waterman Fault to Afton Canyon; and Tailwater, from Afton Canyon to Silver Dry Lake. Most of the baseflow in the main Mojave River channel is underground. Impermeable bedrock forces ground water to the surface of the channel at the Upper and Lower Narrows near Victorville and at Afton Canyon, below Barstow. The Mojave River is one of the Lahontan Regional Board's priority watersheds for the Watershed Management Initiative.

Water Quality Standards Not Attained

The numerical water quality objectives for sulfate applicable to this segment of the river are 40 milligrams per liter (mg/L) as an annual mean and 100 mg/L as a 90th percentile value. (Under a 90th percentile objective, no more than 10 percent of all samples during a

Mojave River, Sulfate

2002 Section 303(d) Fact Sheet, Page 2

given year are allowed to exceed the stated concentration.) These water quality objectives date from 1975 and were probably based on limited historical sampling data.

Evidence of Impairment

Sulfate concentrations in five samples collected at the Upper Narrows between March 2000 and June 2001 ranged from 47 to 260 mg/L, with a mean concentration of 191 mg/L. Four out of five samples exceeded the 90th percentile value. Sulfate concentrations in samples collected at the Lower Narrows during the same period ranged from 22 to 62 mg/L, with a mean concentration of 40.4; this value slightly exceeds the annual mean objective.

Extent of Impairment

The segment proposed for listing is between the Upper and Lower Narrows, about two miles in length.

Potential Sources

Potential upstream sources of sulfate loading to the groundwater that surfaces at the Upper Narrows include geothermal springs tributary to Deep Creek, wastewater discharges from communities in the upper watershed, and imported (California Water Project) water stored in Silverwood Lake.

TMDL Priority

This TMDL is recommended for high priority with completion projected to occur after 2015.

Information Sources

California Regional Water Quality Control Board, Lahontan Region, 1975. *Water Quality Control Plan for the South Lahontan Basin*.

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region*.

California Regional Water Quality Control Board, Lahontan Region. Mojave River and D Street data.

SEARLES LAKE, SALINITY/TDS/CHLORIDES
2002 Section 303(d) Fact Sheet
Delisting

Rationale for Delisting

The ephemeral waters of Searles Lake, including the ponds containing waste brine from mineral extraction operations by IMC Chemical, Inc. (IMCC), are proposed to be delisted for “Salinity/TDS/Chlorides” because the “impairment” is natural and the lake is supporting aquatic life uses to the extent possible under its extreme environmental conditions. The high concentrations of salts in surface waters, and brine deposited in surface waters, come ultimately from natural sources including evaporative concentration in a closed hydrologic basin over geologic time.

Concentrations of total dissolved solids (about 250,000 to 400,000 milligrams per liter or mg/L) and trace elements such as arsenic (60 to 170 mg/L) in Searles Lake brine greatly exceed state and federal criteria for protection of drinking water and freshwater aquatic life uses. However, the surface waters of Searles Lake are not designated for the Municipal and Domestic Supply beneficial use, and the designated aquatic habitat use is Inland Saline Water Habitat, not freshwater habitat. Naturally occurring salts and trace elements are not “pollutants” under the definition in the Clean Water Act. A staff literature review indicates that the desert playa lakes of California support aquatic life and wildlife uses by organisms adapted to their extreme environmental conditions and should not be considered “impaired” for these uses in spite of their high salt and trace element concentrations. The U.S. Environmental Protection Agency’s (USEPA’s) 1997 guidance for the development of site specific aquatic life criteria states: *“For aquatic life uses, where the natural background concentration for a specific parameter is documented, by definition that concentration is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans.”* See the Lahontan Regional Board’s 2001 staff report for further discussion of natural impairment in relation to listing and TMDLs.

Regional Board staff analyzed the beneficial uses of Searles Lake and its watershed in connection with Basin Plan Amendments in 2000. Further amendments, under development, could define beneficial uses for the IMCC brine ponds separately from those of the remainder of the lakebed.

Watershed Characteristics

Searles Lake is a Mojave Desert playa lake whose internally drained watershed is located in the Trona Hydrologic Unit (No. 621.00) in portions of Kern, Inyo, and San Bernardino Counties. The entire Searles Lake bed (about 40 square miles in area) is listed although the actual amount and area of surface water vary over time. The lake is a remnant of a much larger Pleistocene drainage system. The lake has a current surface elevation of about 1620 feet and a current drainage area of about 751 square miles. There are numerous ephemeral tributary streams and some perennial springs and streams in the Argus Mountains north of the lakebed. The lakebed is a “moist playa” with saturated brine near the surface in some areas; ephemeral water may collect on the surface following periods of high precipitation and runoff. Most of the surface water currently on the lakebed is brine extracted from beneath the lakebed by IMCC and returned to the lakebed following

Searles Lake, Salinity/TDS/Chlorides
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the extraction of minerals. IMCC owns or leases about half of the lakebed, and the remainder of the watershed is mostly under the jurisdiction of the U.S. Bureau of Land Management and China Lake Naval Weapons Center. Wells, pipelines, roads, power lines, and other facilities are located on the lakebed; industrial facilities are located on the west side of the lakebed at Westend, Trona and Argus.

Information Sources:

California Regional Water Quality Control Board, Central Valley Region, 2000. *A Compilation of Water Quality Goals*.

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region*.

California Regional Water Quality Control Board, Lahontan Region, 2000. *Staff Report/Draft Environmental Document for Proposed Amendments to the Water Quality Control Plan for the Lahontan Region (Basin Plan)*, State Clearinghouse Number 98092052. April, 2000.

California Regional Water Quality Control Board, Lahontan Region, 2000. *Use Attainability Analysis for Nine "Naturally Impaired" Waters of the Lahontan Region*, April 2000.

California Regional Water Quality Control Board, Lahontan Region, 2000. *Analysis of the Beneficial Uses REC-1, REC-2, SAL, and WILD with respect to Searles Dry Lake, IMC Chemicals Inc., Trona, San Bernardino County, and Response to IMCC Comments made during the July 2000 Regional Board Meeting*.

California Regional Water Quality Control Board, Lahontan Region, 2001. *Staff Report on Recommended Changes to Lahontan Region's Section 303(d) List of Impaired Surface Water Bodies*.

U.S. Environmental Protection Agency, 1997. Establishing Site Specific Aquatic Life Criteria Equal to Natural Background. Memorandum dated November 5, 1997 from Tudor T. Davies, Director, Office of Science and Technology, USEPA Office of Water.

SEARLES LAKE, PETROLEUM HYDROCARBONS
2002 303(d) Fact Sheet
Listing

Summary of Proposed Action

The ephemeral surface waters of Searles Dry Lake, including ponds containing waste brine from IMC Chemical's mineral extraction operations, are proposed for Section 303(d) listing due to adverse impacts on beneficial uses, and violations of narrative objectives, from petroleum products in industrial waste discharges. (The surface waters of Searles Lake are currently listed for salinity, total dissolved solids, and chlorides, but are being proposed for delisting for those parameters since the naturally occurring salts and trace elements are not "pollutants" within the definition in the Clean Water Act. See the separate fact sheet for delisting.)

Table 1. 303(d) Listing/TMDL Information

Waterbody Name	Searles (Dry) Lake	Pollutants/Stressors	Petroleum hydrocarbons
Hydrologic Unit	621.00	Sources	Industrial waste
Total Area	40 square miles	TMDL priority	Low
Size Affected	Surface waters of lake; area is variable	TMDL End Date	After 2015
Latitude/Longitude	35.733° W, 117.333°N	Original 303(d) Listing Year	2002

Watershed Characteristics

Searles Lake is a Mojave Desert playa lake whose internally drained watershed is located in the Trona Hydrologic Unit (No. 621.00) in portions of Kern, Inyo, and San Bernardino Counties. The entire Searles Lake bed (about 40 square miles in area) is listed although the actual amount and area of surface water vary over time. The lake is a remnant of a much larger Pleistocene drainage system. The lake has a current surface elevation of about 1620 feet and a current drainage area of about 751 square miles. There are numerous ephemeral tributary streams and some perennial springs and streams in the Argus Mountains north of the lakebed. The lakebed is a "moist playa" with saturated brine near the surface in some areas; ephemeral water may collect on the surface following periods of high precipitation and runoff. Most of the surface water currently on the lakebed is brine extracted from beneath the lakebed by IMCC and returned to the lakebed following the extraction of minerals. IMCC owns or leases about half of the lakebed, and the remainder of the watershed is mostly under the jurisdiction of the U.S. Bureau of Land Management and China Lake Naval Weapons Center. Wells, pipelines, roads, power lines, and other facilities are located on the lakebed; industrial facilities are located on the west side of the lakebed at Westend, Trona and Argus. The brine ponds on the lakebed are not lined and there are no fixed boundaries between them and other surface and subsurface waters of Searles Lake.

Searles Lake, Petroleum Hydrocarbons 2002 303(d) Fact Sheet, page 2

Water Quality Standards Not Attained

Searles Lake is located on the Pacific Flyway and serves as resting habitat for several species of migratory birds including Brown Pelican, Common Snipe, Whitefaced Ibis, Mallard, and American Coot. Documented bird kills are considered impairment of the Wildlife Habitat (WILD) beneficial use for surface waters of the lake. Lahontan Regional Board Cleanup and Abatement Order No. 6-00-64 also cites impairments of the Non-Contact Water Recreation (REC-2), Water Contact Recreation (REC-1), and Saline Water Habitat (SAL) uses, and violations of narrative water quality objectives for chemical constituents, floating material, oil and grease and toxicity.

Evidence of Impairment

Lahontan Regional Board Cleanup and Abatement Order No. 6-00-64 describes the problem as follows:

“There have been numerous spills of kerosene and non-kerosene hydrocarbon[s] from the facilities to Searles Lake, which is a hydrologically closed basin. Any discharge of petroleum hydrocarbons and other non-native constituents accumulates in the lake. Specifically, petroleum hydrocarbon constituents have concentrated to a point that a visible oily sheen is periodically present in the Searles Lake waters. At times, oily globules coat the bank of the lake. Observations by both Regional Board staff and California Department of Fish and Game (DFG) staff during site inspections have confirmed numerous dead waterfowl that were encrusted with brine and oil. These conditions indicate that discharges from the IMCC facilities have created a condition of pollution in Searles Lake waters and impaired its beneficial uses. ... During numerous site inspections since February 17, 2000 (total of 13 inspections up to June 23, 2000), Board staff observed visible black floating oil on the discharge channels, dredge pond, and percolation ponds of Searles Lake. Board staff collected samples of the floating oil, and analysis revealed the material had 156,000 ppm of TPH [Total Petroleum Hydrocarbons]. ... Board staff has observed numerous dead waterfowl encrusted with brine and oil, which the DFG has collected. The DFG testified during the June 2000 Regional Board meeting that oil was found in the internal organs of the waterfowl. To date, the DFG has collected over 150 dead waterfowl. ”

The Regional Board order also states that the Department of Fish and Game issued its own Cleanup and Abatement Order on February 18, 2000.

Extent of Impairment

All surface waters of the entire lakebed are recommended for listing, since the locations and areas of naturally ponded surface runoff and waste brine ponds are variable over time. The Searles Lake Bed has an area of 40 square miles.

Searles Lake, Petroleum Hydrocarbons

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Potential Sources

Petroleum hydrocarbons (including kerosene) in surface waters of Searles Lake have been linked to waste discharges from the IMCC industrial facilities at Trona, Argus, and Westend. IMCC uses a petroleum hydrocarbon-based solvent similar to kerosene in its mineral extraction process; the solvent can be present in effluent from the Trona Plant. The Argus Plant effluent also contains non-kerosene hydrocarbons from machine oil drippings. Other chemicals used by IMCC, such as monoethanolamine (MEA), formaldehyde, and phenols, are present in Searles Lake brine.

TMDL Priority

The problem is being addressed through permits and cleanup orders. Identification of sources of contaminants is ongoing. Regional Board staff are proposing Basin Plan amendments to define beneficial uses for the brine ponds separate from the uses of the natural ephemeral surface waters of the lake as a whole. Because the end date for abatement of petroleum product discharges is unknown and full cleanup may not be achieved by the next (2004) 303(d) listing cycle, listing is being proposed in 2002. The problem will need to be addressed through the Regional Board's permitting and enforcement programs whether or not a TMDL is developed. Searles Lake may be recommended for delisting in the future if ongoing cleanup activities and/or Basin Plan amendments lead to attainment of the wildlife use.

Information Sources

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region*.

California Regional Water Quality Control Board, Lahontan Region, 2000. *Staff Report/Draft Environmental Document for Proposed Amendments to the Water Quality Control Plan for the Lahontan Region (Basin Plan)*, State Clearinghouse Number 98092052, April, 2000.

California Regional Water Quality Control Board, Lahontan Region, 2000. *Analysis of the Beneficial Uses REC-1, REC-2, SAL, and WILD with Respect to Searles Dry Lake, IMC Chemicals, Inc., Trona, San Bernardino County, and Response to IMCC Comments made during the July 2000 Regional Board meeting*.

California Regional Water Quality Control Board, Lahontan Region, 2000. Amended Cleanup and Abatement Order No. 6-00-64A1, WDID Nos.: 6B368020001, 6B368905004, and 6B368905005, Requiring IMC Chemicals and the U.S. Department of the Interior, Bureau of Land Management, To Clean Up and Abate the Effects of Waste Discharges to Searles Lake From the Trona, Argus, and Westend Facilities, San Bernardino County.

California Regional Water Quality Control Board, Lahontan Region, 2000. Amended Cease and Desist Order No. 6-00-61A1, WDID: 6B368020001/6B368905004-Consideration of an Amended Cease and Desist Order-IMC Chemicals, Inc. and the U.S. Department of Interior, Bureau of Land Management, Trona and Argus Operations, Searles Lake.

NINE NATURALLY IMPAIRED WATERS, SALINITY, METALS, AND ARSENIC
2002 303(d) Fact Sheet
Delisting

Rationale for Delisting

The nine water bodies listed in Tables 1 and 2 are saline or geothermal surface waters listed in the late 1980s or early 1990s for salinity and/or toxic trace metals. Although constituents exceed drinking water standards, all of these water bodies were given potential Municipal and Domestic Supply (MUN) beneficial use designations as a result of Basin Plan amendments which applied the MUN use to almost all waters in the Lahontan Region. The Regional Board amended its Basin Plan in 2000 to remove the MUN use, and the conflict with drinking water standards, for the waters in Table 1. These amendments have been approved by the State Board and are pending final approvals from other agencies. Regional Board staff conducted a scientific literature review and prepared a detailed Use Attainability Analysis to show that:

- These waters meet the “Sources of Drinking Water Policy” (State Water Resources Control Board Resolution 88-63) criteria for exclusion from the MUN use due to their poor quality, and are unlikely to be in demand as drinking water due to the relatively small amounts of water available;
- The salts and trace elements affecting these water bodies come from natural sources (volcanic, geothermal, and/or evaporative concentration in closed basins over geologic time);
- Saline and geothermal waters support unique biological communities adapted to their extreme environmental conditions, and should not be considered “impaired” in relation to freshwater aquatic life criteria. The U.S. Environmental Protection Agency’s 1997 guidance for the development of site specific aquatic life criteria states: *“For aquatic life uses, where the natural background concentration for a specific parameter is documented, by definition that concentration is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans.”*

These waters, and other “naturally impaired” waters in the Lahontan Region, are recommended for removal from the Section 303(d) list because the salts and trace elements in question are not “pollutants” under the definition in the Clean Water Act. See the Regional Board staff report on the Section 303(d) List update for further discussion of naturally impaired waters in relation to listing.

Because of the extensive documentation already provided in the Use Attainability Analysis, separate fact sheets have not been prepared for these waters.

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2002 Section 303(d) Fact Sheet, Page 2**

Table 1. Naturally Impaired Waters Addressed in Lahontan Region's 2000 Basin Plan Amendments

Water Body Name	County	HU No.	Reason for Listing
Wendel Hot Springs	Lassen	637.20	Metals
Amedee Hot Springs	Lassen	637.20	Metals
Hot Creek	Mono	631.40	Metals
Fales Hot Springs	Mono	631.40	Metals
Little Hot Creek	Mono	603.10	Arsenic
Little Alkali Lake	Mono	603.10	Arsenic
Deep Springs Lake	Inyo	605.00	Salinity/TDS/Chlorides
Keough Hot Springs	Inyo	603.00	Metals
Amargosa River	Inyo/San Bernardino	609.00	Salinity/TDS/Chlorides

Table 2. Summary of Compliance With Drinking Water Criteria for Nine "Naturally Impaired" Waters (from Use Attainability Analysis report)

Water Body Name	Sources of Drinking Water Policy TDS Threshold (3000 mg/L) Exceeded?	Parameters Exceeding Other Standards or Criteria	Water Quantity Considerations
Wendel Hot Springs	No	TDS, specific conductance, arsenic, sulfate, fluoride, sodium	Flow in natural springs reduced due to nearby geothermal development.
Amedee Hot Springs	No	TDS, sulfate, fluoride, boron, sodium	Flow in natural springs reduced due to nearby geothermal development.
Fales Hot Springs	No	TDS, specific conductance, sulfate, fluoride, arsenic, copper, molybdenum, lead, aluminum	
Hot Creek	No	Specific conductance, fluoride, boron	
Little Hot Creek	No	Arsenic, beryllium, specific conductance, boron, lead, fluoride, antimony.	Annual flow ca. 1000 acre-feet; evaporation increases salinity
Little Alkali Lake	Yes	TDS, Arsenic	Ephemeral
Keough Hot Springs	No	TDS	Flow 600 gallons per minute
Deep Springs Lake	Yes	TDS, specific conductance, pH	Ephemeral
Amargosa River	Yes (in Death Valley)	TDS, specific conductance, arsenic, sulfate, sodium, chloride, fluoride, boron.	Intermittent, variable annual flows

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